	Application No.	**Applicant(s)**
Notice of Allowability	10/751,016	RAMESH ET AL.
	Examiner	**Art Unit**
	Usmaan Saeed	2166

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the amendment dated 10/25/2007*.

2. ☒ The allowed claim(s) is/are *1-2, 4, 10-11, 15-16, 18, 24-25, 29-30, 32, and 38-39 (renumbered as 1-15)*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None of the:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *01/28/08* .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☒ Other *See Continuation Sheet*.

HOSAIN ALAM
SUPERVISORY PATENT EXAMINER

Continuation of Attachment(s) 9. Other: Copy of Applicant's email for Examiners proposed amendment.

DETAILED ACTION

1.   This communication is in response to the amendment filed on 10/25/2007.

After thorough search and examination of the present application and in light of

the prior art made of record, claims 1-2, 4, 10-11, 15-16, 18, 24-25, 29-30, 32, and 38-

39 (renumbered as 1-15) are allowed.

Claims 3, 5-9, 12-14, 17, 19-23, 26-28, 31, 33-37, and 40-42 have been

cancelled.

EXAMINER'S AMENDMENT

2.   An examiner's amendment to the record appears below. Should the changes

and/or additions be unacceptable to applicant, an amendment may be filed as provided

by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be

submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone

interview/email with Attorney, Howard L. Speight, Registration No. 37,733 on January

28, 2008.

A copy of the attorneys email regarding the proposed examiner's amendment is

also attached.

Please amend the claims, which were filed on 10/25/2007 with the new

version as follows:

1.   **(currently amended)**   A method for representing statistics about a table including one or more rows, each row including a respective value, the method including:

creating one or more histogram buckets, each histogram bucket including a width representing a respective range of values and a height representing a count of rows in the table having values in the range of values;

creating one or more high-bias buckets, each high-bias bucket including one or more high-bias values up to a maximum number of high-bias values (F) that appear in a minimum percentage of rows in the table and for each high-bias value a number of rows that contain the high-bias value;

where the minimum percentage of rows is computed using F and B, where B is the total number of buckets;

repeating the following:

(a) determining an average height of the histogram buckets;

(b) determining a reclassification threshold based on the average height of the histogram buckets; and

(c) concluding that a value associated with one of the one or more histogram buckets occurs in more rows of the table than the reclassification threshold, and, in response, concluding that the number of high-bias values associated with at least one of the one or more high-bias buckets has not reached the maximum number of high-bias values, and, in response, including the value in one of

the high-bias buckets for which the number of high-bias values has

not reached the maximum number of high-bias values;

until no values included in any of the ranges of values associated with the

histogram buckets occur in more than the reclassification threshold

number of rows in the table; and

saving in a memory the width and the height of each of the one or more

histogram buckets and the one or more high-bias values and numbers of

rows for each of the one or more high-bias buckets.

2.   **(previously presented)** The method of claim 1, where the sum of the number of

histogram buckets and the number of high-bias buckets is less than a predetermined

number.

3.   **(cancelled)**

4.   **(previously presented)**   The method of claim 1, where the reclassification

threshold is equal to the average height of the histogram buckets multiplied by (1+S),

where S is a positive percentage represented as a decimal.

5-9.   **(cancelled)**

10.   **(currently amended)**   The method of claim 1, further including setting the

minimum percentage of rows to $\dfrac{1}{FB}\%$ ~~, where B is equal to the total number of~~

~~buckets~~.

11.   (**currently amended**) The method of claim 1, further including adjusting the

minimum percentage of rows to $\dfrac{V(FB-I)}{FB}\%$, where ~~B is equal to the total number of~~

~~buckets,~~ V is equal to the minimum percentage of rows, and I is equal to a number of

values represented in high-bias buckets.

12-14.   (**cancelled**)

15.   (**currently amended**) A database system including:

   a massively parallel processing system including:

      one or more nodes;

      a plurality of CPUs, each of the one or more nodes providing access to one or

         more CPUs;

      a plurality of data storage facilities each of the one or more CPUs providing

         access to one or more data storage facilities;

      P partitions, each partition residing on one or more data storage facilities;

   a process for representing statistics, where the database system represents

         statistics about a table including one or more rows, each row including a

         respective value, the process including:

creating one or more histogram buckets, each histogram bucket including a

width representing a respective range of values and a height

representing a count of rows in the table having values in the range of

values;

creating one or more high-bias buckets, each high-bias bucket including one

or more high-bias values up to a maximum number of high-bias values

(F) that appear in a minimum percentage of rows in the table and for

each high-bias value a number of rows that contain the high-bias

value;

where the minimum percentage of rows is computed using F and B,

where B is the total number of buckets;

repeating the following:

(a) determining an average height of the histogram buckets;

(b) determining a reclassification threshold based on the average

height of the histogram buckets; and

(c) concluding that a value associated with one of the one or more

histogram buckets occurs in more rows of the table than the

reclassification threshold, and, in response, concluding that the

number of high-bias values associated with at least one of the

one or more high-bias buckets has not reached the maximum

number of high-bias values, and, in response, including the

value in one of the high-bias buckets for which the number of

high-bias values has not reached the maximum number of high-bias values;

until no values included in any of the ranges of values associated with the histogram buckets occur in more than the reclassification threshold number of rows in the table; and

saving in a memory the width and the height of each of the one or more histogram buckets and the one or more high-bias values and numbers of rows for each of the one or more high-bias buckets.

16.   (previously presented) The database system of claim 15, where the sum of the number of histogram buckets and the number of high-bias buckets is less than a predetermined number.

17.   (cancelled)

18.   (previously presented) The database system of claim 15, where the reclassification threshold is equal to the average height of the histogram buckets multiplied by (1+S), where S is a positive percentage represented as a decimal.

19-23.   (cancelled)

24.   (currently amended) The database system of claim 15, further including setting

the minimum percentage of rows to $\frac{1}{FB}\%$ ~~, where B is equal to the total number of buckets~~.

25. (**currently amended**) The database system of claim 15, further including adjusting the minimum percentage of rows to $\frac{V(FB-I)}{FB}\%$, where ~~B is equal to the total number of buckets,~~ V is equal to the minimum percentage of rows, and I is equal to a number of values represented in high-bias buckets.

26-28. (**cancelled**)

29. (**currently amended**) A computer program, stored on a tangible storage medium, for use in representing statistics in a database running in a partitioned parallel environment including P partitions, each partition residing on one or more parallel processing systems, the database including a first table including one or more rows stored in one or more of the P partitions, the program including executable instructions that cause a computer to:

represent statistics about a table including one or more rows, each row including one or more values, the program further causing the computer to:

create one or more histogram buckets, each histogram bucket including a width representing a respective range of values and a height representing a count of rows in the table having values in the range of values;

create one or more high-bias buckets, each high-bias bucket including one or more high-bias values up to a maximum number of high-bias values (F) that appear in a minimum percentage of rows in the table and for each high-bias value a number of rows that contain the high-bias value;

where the minimum percentage of rows is computed using F and B, where B is the total number of buckets;

repeat the following:

(a) determine an average height of the histogram buckets;

(b) determine a reclassification threshold based on the average height of the histogram buckets; and

(c) conclude that a value associated with one of the one or more histogram buckets occurs in more rows of the table than the reclassification threshold, and, in response, conclude that the number of high-bias values associated with at least one of the one or more high-bias buckets has not reached the maximum number of high-bias values, and, in response, include the value in one of the high-bias buckets for which the number of high-bias values has not reached the maximum number of high-bias values;

until no values included in any of the ranges of values associated with the histogram buckets occur in more than the reclassification threshold number of rows in the table; and

save in a memory the width and the height of each of the one or more histogram buckets and the one or more high-bias values and numbers of rows for each of the one or more high-bias buckets.

30.   (**previously presented**) The computer program of claim 29, where the sum of

the number of histogram buckets and the number of high-bias buckets is less than a

predetermined number.

31.   (**cancelled**)

32. (**previously presented**) The computer program of claim 29, where the

reclassification threshold is equal to the average height of the histogram buckets

multiplied by (1+S), where S is a positive percentage represented as a decimal.

33-37.   (**cancelled**)

38.   (**currently amended**) The computer program of claim 29, further including

executable instructions that cause the computer to set the minimum percentage of rows

to $\dfrac{1}{FB}\%$ ~~, where B is equal to the total number of buckets~~.

39.   (**currently amended**) The computer program of claim 29, further including

executable instructions that cause the computer to adjust the minimum percentage of

rows to $\dfrac{V(FB-I)}{FB}\%$, where ~~B is equal to the total number of buckets,~~ V is equal to

the minimum percentage of rows, and I is equal to a number of values represented in

high-bias buckets.

40-42.   (**cancelled**)

Reason for Allowance

3.   The prior art made of record does not teach or fairly suggest the combination of elements, as recited in independent claims 1, 15, and 29.

More specifically, the prior art of records does not specifically suggest the combination of "creating one or more high-bias buckets, each high-bias bucket including one or more high-bias values up to a maximum number of high-bias values (F) that appear in a minimum percentage of rows in the table and for each high-bias value a number of rows that contain the high-bias value; where the minimum percentage of rows is computed using F and B, where B is the total number of buckets and saving in a memory the width and the height of each of the one or more histogram buckets and the one or more high-bias values and numbers of rows for each of the one or more high-bias buckets" in combination with all the other limitations in the independent claims 1, 15, and 29.

These features together with other limitations of the independent claims are novel and non-obvious over the prior art of record. The dependent claims 2, 4, 10-11, 16, 18, 24-25, 30, 32, and 38-39 being definite, enabled by the specification, and further limiting to the independent claims, are also allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

4.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Usmaan Saeed whose telephone number is (571)272-4046. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on (571)272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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